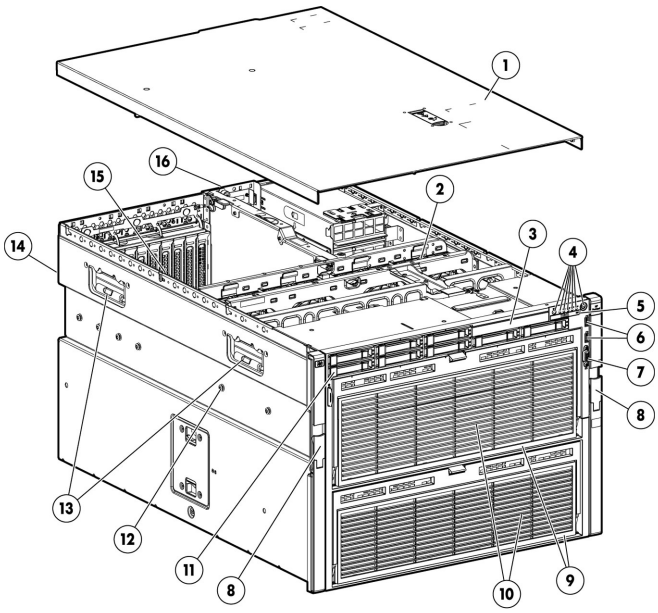
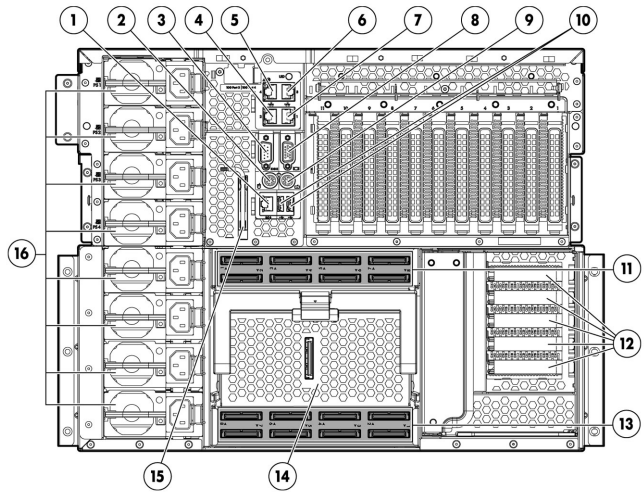
Overview





Front View:

1. Quick removal access panel
2. 8 hot plug redundant fans standard on all models, upper four fan positions shown, lower four not shown
3. DVD drive bay
4. Front panel LED display and Power button
5. Slide-out System Insight Display
6. Two front accessible USB 2.0 ports
7. One front video port
8. Quick release lever for fast server access
9. Upper and lower front accessible processor and memory drawer
10. Support for up to eight 8-core Intel Xeon processors (4 processors in upper and 4 processors in the lower drawer)
11. Support for up to 8 small form factor (SFF) SAS drives
12. Universal tool-less "Snap In" Sliding Rail Solution
13. Server lifting handles
14. 8U rack form factor
15. Up to 11 full height/full length slots supported
16. Hot Plug Redundant Power Supplies (4 or 8 depending on the model)

Rear View:

1. Integrated Lights-Out 3 port
2. Mouse port
3. Serial port
4. Gigabit NIC port
5. Gigabit NIC port
6. Gigabit NIC port
7. Gigabit NIC port
8. Video port
9. Keyboard port
10. Two USB ports
11. Upper XNC ports
12. Up to 5 low profile slots supported
13. Lower XNC ports
14. XNC module
15. Service tool
16. Power supplies (4 or 8 depending on the model)

At A Glance

HP ProLiant DL980 G7 with HP PREMA Architecture is an eight socket server built to handle the largest x86 enterprise environments with confidence. The DL980 G7 blends industry standard economies with advanced mission critical capabilities to deliver balanced scaling, self healing resiliency and breakthrough efficiencies needed in essential enterprise compute environments. Whether housing

Overview

a single very large data intensive workload, or many consolidated or virtualized workloads to improve resource utilization, the DL980 G7 featuring PREMA Architecture with Smart CPU caching and a redundant system fabric, is designed to reduce bottlenecks, improve throughput and performance, as well as deliver enhanced reliability not previously available in an x86 environment.

- Processors:
  - Intel® Xeon® 6500 or 7500 series processors with up to 8-cores per processor
  - Supports up to eight Intel® Xeon® 6500 or 7500 series processors per system
  - New Intel Microarchitecture with Intel Virtualization Technology FlexMigration
  - Up to three Industry Standard Intel® 7500 Chipsets with six high-speed interconnects up to 6.4GT/s
- Memory:
  - PC3-10600R Fully Buffered DIMMs (DDR3)
  - Can be configured in Mirrored, Online Spare, or Advanced ECC modes
- Storage Controller:
  - HP Smart Array P410i with optional Fast Backed Write Cache (FBWC)
- Internal Drive Support:
  - Support for up to 8 hot plug SFF SAS drives
  - HP Slim SATA DVD RW Optical Drive
- Network Controller:
  - HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
- Expansion Slots:
  - Up to 16 slots supported: 11 full length/full height and 5 low profile slots
  - Base I/O backplane configuration: 2 PCI-E 2.0 x8, 3 PCI-E x4
  - Optional full height/full length I/O backplanes - (choose only one)
    - 2 PCI-E 2.0 x16, 1 PCI-E 2.0 x4, 2 PCI-X
    - 4 PCI-E 2.0 x8, 1 PCI-E 2.0 x4, 1 PCI-E 1.1 x4
  - Optional low profile I/O backplane
    - 4 PCI-E 2.0 x8, 1 PCI-E 2.0 x4
- Ports:
  - Front: USB (2), Video
  - Rear: USB (2), Video, NIC
  - Internal: USB (2), SD slot (1)
- Redundancy:
  - Rear accessible Hot Plug Power Supplies with option for redundancy (Redundant power supplies are standard on some models)
  - Eight Hot Plug Redundant Fans standard
- Infrastructure Management:
  - Convenient slide-out Systems Insight Display for quick and easy front view server diagnostics, along with status LEDs, Automatic Server Recovery (ASR), ROM Based Setup Utility (RBSU)
  - HP Integrated Lights-Out 3 management processor for simplified server setup, health monitoring and recovery, power and thermal control, and lights-out remote administration.
  - HP Insight Control a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, control and optimize your IT infrastructure through a single, simple management console. Insight Control supports both Windows and Linux-based central management servers.
  - HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. This ultimately enables them to dynamically keep pace with the organization's changing business requirements.
- Form Factor:
  - 8U rack models
- Operating Systems:
  - Supports Windows Server, RHEL, SLES, OEL, and VMware
- Deployment/Serviceability:

- Front and rear video ports
- Front accessible processor, and memory allow server to stay safely secured in the rack during servicing
- Quick Deploy Rail System includes sliding universal rails, an ambidextrous cable management arm and quick release levers for fast and easy serviceability and in-rack tool-less access to major components
- Tool-less access to all system components for easy in rack serviceability
- Customer Self Repair (CSR): HP products are designed with many CSR parts to minimize repair time and allow for greater flexibility in performing defective parts replacement

- Warranty:
  - This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
    NOTE: Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Standard Features

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

Processor
Four or eight of the following processors depending on model

Eight-Core Processors
Intel Xeon® X7560 Processor (2.26GHz, 24MB cache, 130W)
Intel Xeon® X6550 Processor (2.00GHz, 18MB cache, 130W)
Six-Core Processors
Intel Xeon® E6540 Processor (2.00GHz, 18MB cache, 105W)
Four-Core Processors
Intel Xeon® E7520 Processor (1.86GHz, 18MB cache, 95W)

Chipset

Industry Standard Intel® 7500 Chipset
Hewlett-Packard DL980 G7 Node Controller
NOTE: For more information regarding Intel chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/

Memory Protection

Advanced ECC
Mirrored Memory
Online Spare Memory Rank

Memory
One of the following depending on Model

Type	PC3-10600R Fully Buffered DIMMs (DDR3)
Standard	128GB (16 x 8GB) or 256GB (32 x 8GB) depending on Model
Maximum	2TB (128 x 16GB)

Network Controller

HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter

Expansion Slots							
Expansion Slots with No Option Card	Expansion Slot #	Technology	Width	Connector Width*	Bus Number(*)(**)	Form Factor	Notes
	1	N/A	N/A	N/A	N/A	N/A	N/A
	2	N/A	N/A	N/A	N/A	N/A	N/A
	3	N/A	N/A	N/A	N/A	N/A	N/A
	4	N/A	N/A	N/A	N/A	N/A	N/A
	5	N/A	N/A	N/A	N/A	N/A	N/A
	6	N/A	N/A	N/A	N/A	N/A	N/A
	7	PCI Express Gen2	x4	x8	0x05	FH/FL	
	8	PCI Express Gen2	x4	x8	0x08	FH/FL	

	9	PCI Express Gen2	x8	x16	0x0B	FH/FL	
	10	PCI Express Gen2	x4	x8	0x0E	FH/FL	
	11	PCI Express Gen2	x8	x16	0x11	FH/FL	

* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.
** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).
FL= Full length; FH = Full height; LP = low-profile.

Expansion Slots							
Expansion Slots with Combination PCI-X, PCI-e and 300W GPU I/O Expander	Expansion Slot #	Technology	Width	Connector Width*	Bus Number(*)(**)	Form Factor	Notes
	1	PCI-X	64-bit	N/A	0x72 (Device 1)	FH/FL	100MHz
	2	PCI-X	64-bit	N/A	0x72 (Device 2)	FH/FL	100MHz
	3	PCI Express Gen2	x16	x16	0x76	FH/FL	
	4	PCI Express Gen2	x4	x8	0x79	FH/FL	
	5	N/A	N/A	N/A	N/A	N/A	N/A
	6	PCI Express Gen2	x16	x16	0x84	FH/FL	
	7	PCI Express Gen2	x4	x8	0x05	FH/FL	
	8	PCI Express Gen2	x4	x8	0x08	FH/FL	
	9	PCI Express Gen2	x8	x16	0x0B	FH/FL	
	10	PCI Express Gen2	x4	x8	0x0E	FH/FL	
	11	PCI Express Gen2	x8	x16	0x11	FH/FL	

* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.
** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).
FL= Full length; FH = Full height; LP = low-profile.

Standard Features

Expansion Slots							
Expansion Slots with Standard PCI-e option I/O Expander	Expansion Slot #	Technology	Width	Connector Width*	Bus Number(*)(**)	Form Factor	Notes
	1	PCI Express Gen1	x4	x8	0x71	FH/FL	
	2	PCI Express Gen2	x8	x16	0x74	FH/FL	
	3	PCI Express Gen2	x8	x16	0x77	FH/FL	
	4	PCI Express Gen2	x4	x8	0x7A	FH/FL	
	5	PCI Express Gen2	x8	x16	0x84	FH/FL	
	6	PCI Express Gen2	x8	x16	0x87	FH/FL	
	7	PCI Express Gen2	x4	x8	0x05	FH/FL	
	8	PCI Express Gen2	x4	x8	0x08	FH/FL	
	9	PCI Express Gen2	x8	x16	0x0B	FH/FL	
	10	PCI Express Gen2	x4	x8	0x0E	FH/FL	
	11	PCI Express Gen2	x8	x16	0x11	FH/FL	

* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.
** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).
FL= Full length; FH = Full height; LP = low-profile.

Standard Features

Expansion Slots							
Expansion Slots with Low Profile I/O expander (PCI-e option)	Expansion Slot #	Technology	Width	Connector Width*	Bus Number(*)(**)	Form Factor	Notes
	7	PCI Express Gen2	x4	x8	0x05	FH/FL	
	8	PCI Express Gen2	x4	x8	0x08	FH/FL	
	9	PCI Express Gen2	x8	x16	0x0B	FH/FL	
	10	PCI Express Gen2	x4	x8	0x0E	FH/FL	
	11	PCI Express Gen2	x8	x16	0x11	FH/FL	
	12	PCI Express Gen2	x8	x16	0x71	LP	
	13	PCI Express Gen2	x8	x16	0x74	LP	
	14	PCI Express Gen2	x4	x8	0x77	LP	
	15	PCI Express Gen2	x8	x16	0x7A	LP	
	16	PCI Express Gen2	x8	x16	0x84	LP	

* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.
** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).
FL= Full length; FH = Full height; LP = low-profile.

Expansion Slots							
Expansion Slots with Combination PCI-X, PCI-e and 300W GPU and Low Profile PCI-e I/O Expanders	Expansion Slot #	Technology	Width	Connector Width*	Bus Number(*)(**)	Form Factor	Notes
	1	PCI-X	64-bit	N/A	0x52 (Device 1)	FH/FL	100MHz
	2	PCI-X	64-bit	N/A	0x52 (Device 2)	FH/FL	100MHz
	3	PCI Express Gen2	x16	x16	0x56	FH/FL	
	4	PCI Express Gen2	x4	x8	0x59	FH/FL	
	5	N/A	N/A	N/A	N/A	N/A	N/A

	6	PCI Express Gen2	x16	x16	0x5C	FH/FL	
	7	PCI Express Gen2	x4	x8	0x05	FH/FL	
	8	PCI Express Gen2	x4	x8	0x08	FH/FL	
	9	PCI Express Gen2	x8	x16	0x0B	FH/FL	
	10	PCI Express Gen2	x4	x8	0x0E	FH/FL	
	11	PCI Express Gen2	x8	x16	0x11	FH/FL	
	12	PCI Express Gen2	x8	x16	0xA1	LP	
	13	PCI Express Gen2	x8	x16	0xA4	LP	
	14	PCI Express Gen2	x4	x8	0xA7	LP	
	15	PCI Express Gen2	x8	x16	0xAA	LP	
	16	PCI Express Gen2	x8	x16	0xAD	LP	

* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.
** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).
FL= Full length; FH = Full height; LP = low-profile.

Expansion Slots						
Expansion Slots with Standard PCI-e and Low Profile PCI-e option I/O Expanders	Expansion Slot #	Technology	Width	Connector Width*	Bus Number(*)(**)	Form Factor
	1	PCI Express Gen1	x4	x8	0x51	FH/FL
	2	PCI Express Gen2	x8	x16	0x54	FH/FL
	3	PCI Express Gen2	x8	x16	0x57	FH/FL
	4	PCI Express Gen2	x4	x8	0x5A	FH/FL
	5	PCI Express Gen2	x8	x16	0x5D	FH/FL
	6	PCI Express Gen2	x8	x16	0x60	FH/FL

Standard Features

	7	PCI Express Gen2	x4	x8	0x05	FH/FL
	8	PCI Express Gen2	x4	x8	0x08	FH/FL
	9	PCI Express Gen2	x8	x16	0x0B	FH/FL
	10	PCI Express Gen2	x4	x8	0x0E	FH/FL
	11	PCI Express Gen2	x8	x16	0x11	FH/FL
	12	PCI Express Gen2	x8	x16	0xA1	LP
	13	PCI Express Gen2	x8	x16	0xA4	LP
	14	PCI Express Gen2	x4	x8	0xA7	LP
	15	PCI Express Gen2	x8	x16	0xAA	LP
	16	PCI Express Gen2	x8	x16	0xAD	LP

* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.
** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).
FL= Full length; FH = Full height; LP = low-profile.

Storage Controller

HP Smart Array P410i controller with optional FBWC

Storage Data Protection

The Flash Backed Write Cache (FBWC) increases cache data retention capabilities from two days of existing battery backed write cache (BBWC) to infinite data retention.

- Standard on 4P Models, optional on factory integrated models
- Transportable data protection
- Increases overall controller performance

Storage

Optical Drive	Slimline DVD Drive standard
Hard Drives	None ship standard
Hard Disk Drive Backplane	Internal SAS backplane supports up to eight SFF hard disk drives

Maximum Internal Storage Type

Hot Plug SFF SAS	2.4TB	8 x 300GB

Standard Features

Interfaces	Serial	1
	Pointing Device (Mouse)	1
	Video	1 front; 1 rear
	Keyboard	1
	USB 2.0 Ports	6 total: 2 front; 2 rear; 2 internal NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html
	iLO 3 Remote Management	1
	Network RJ-45	4
Graphics	Integrated ATI ES1000 with 32MB embedded video SDRAM Max Resolution 1280 x 1024 x 16M color	
Form Factor	Rack (8U = 14 inches), ships with Quick Deploy Sliding Rail System, an ambidextrous cable management arm and quick release levers for fast and easy serviceability and in-rack tool-less access to major components.	
HP Insight Management Control Software	HP Insight Foundation	Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters. HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecycle. This provides the customer with higher levels of operational efficiency and highly reliable systems: www.hp.com/go/foundation. The foundation pack includes: • HP SmartStart • HP Management • HP ProLiant Firmware Maintenance SmartStart version supported (minimum): SmartStart 8.5 http://www.hp.com/servers/smartstart
	HP Integrated Lights-Out (iLO)	HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and Insight Dynamics for ProLiant, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service. HP iLO can be purchased stand-alone and it also is included with the purchase of HP Insight Conrol. For more information, visit: www.hp.com/go/iLO
	HP Insight Control	HP Insight Control, a product option, delivers essential infrastructure

	management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. Two versions of Insight Control are available, to serve environments requiring either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. See www.hp.com/go/insightcontrol HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/insight.
HP Insight Dynamics for ProLiant	HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. As a powerfully integrated by design toolkit to accelerate complex technology projects and simplify daily operations that ultimately enable IT Staff personnel to dynamically keep pace with the organizations changing business requirements. It enables them to plan capacity and power continuously, balance across physical and virtual resources, and ensure cost-effective high availability. It also enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements. In addition to the previous functional benefits, it also provides a cost-effective disaster recovery for physical and virtual environments that works with HP StorageWorks Continuous Access software for both the Enterprise Virtual Array and the XP storage array allowing application environments to be reactivated in minutes with the touch of a button to a remote location. NOTE: For more information, visit: http://www.hp.com/go/insightdynamics

Industry Standard Compliance	ACPI 2.0. Compliant PCIE 2.0 Compliant PXE Support WOL Support Physical Address Extension (PAE) Support Microsoft® Logo certifications USB 2.0 Support

Standard Features

Intelligent Manageability	HP Systems Insight Manager SmartStart Redundant ROM Remote Flash ROM Management Agents Integrated Management Log (IML) Automatic Server Recovery-2 (ASR-2) ROM-Based Setup Utility (RBSU) Dynamic Sector Repairing (with Smart Array Controllers) Drive Parameter Tracking (with Smart Array Controllers) Pre-Failure Warranty (covers processors, SAS hard drives and memory) Redundant/adaptive load balancing NIC Support Hot Spare Boot NOTE: Upon the event of a failed processor in a multi-processing environment, the system will automatically reboot and use the remaining good processor(s).

Availability

HP Advanced Memory Protection Technology - delivers unsurpassed memory protection and server availability with the following supported modes of operation:

- Advanced ECC
  Advanced ECC Memory is the default memory protection mode for the HP ProLiant DL980 G7. In Advanced ECC, the server is protected against correctable memory errors. The server will provide notification if the level of correctable errors exceeds a predefined threshold rate. The server does not fail because of correctable memory errors.
  Advanced ECC provides additional protection over Standard ECC in that it is possible to correct certain memory errors that would otherwise be uncorrectable and result in server failure. Whereas Standard ECC can correct single-bit memory errors, Advanced ECC can correct single-bit and multi-bit memory errors if all failed bits are on the same DRAM device on the DIMM.
- Online Spare Memory Rank (customer option)
  Offers a higher level of memory protection than Advanced ECC alone. If the number of single-bit correctable errors on a rank exceeds the pre-defined error threshold, that rank will fail over to the online spare rank without intervention or server interruption. The failed memory can then be replaced at the user's convenience during a scheduled maintenance window.
  Online Spare Memory is achieved by protecting active memory with online spare memory on the same memory board. No operating system support is required.
- Mirrored Memory (customer option)
  Mirrored Memory provides a higher level of availability than Advanced ECC and Online Spare Memory. With Mirrored Memory, the server is protected against uncorrectable memory errors that would otherwise result in server failure. Mirrored Memory allows the server to keep two copies of all memory data. If an uncorrectable error is encountered, the proper data is retrieved from the copy of memory that did not fail.
- Smart Array P410i Controller with optional Flash Backed Write Cache (FBWC) Enabler provides transportable data protection and increases overall controller performance. Up to 1G Flash Backed Write Cache protection optional on HP ProLiant DL980 G7 (512MB FBWC ships standard with 4P Models).
- Hot Plug Redundant Fans - Eight Hot Plug Redundant Fans ship standard with all models.
- Front Accessible Chassis - Redesigned chassis allows access to memory, processors and hard drives from the front of the server while it remains safely engaged in the rack. This provides easier serviceability and lowers the chance of interfering with neighboring servers' cables and components.
- Hot Plug Universal Drives - Up to eight Hot Plug Universal SFF SAS drives are supported.

Standard Features

- Hot Plug Redundant Power Supplies - Four or eight Hot Plug Redundant Power Supplies ship standard with 4P Base Models

Serviceability

- Front and Rear accessibility provides unsurpassed serviceability by allowing the server to remain safely secured in the rack while maintaining Hot Plug Universal Hard Drives, Hot Plug Redundant Power Supplies, and Memory.
- Innovative Diagnostic Lighting
- Systems Insight Display - precisely depicts all major subsystems of the server (Processors, Memory, CPU, Fans, circuit board Interlock, over-temperature status) and gives instant visual indication of fault status.
- Tool-less interior design
  - Tool-less access to interior of server
  - Rear Access to Hot Plug Redundant Power Supplies
  - PCI Card Guides locks full length PCI cards in place
  - Upper four fans are individually removable. Lower four fans are removable in pairs only.
  - Processor Retention Cage securely locks Processors into their sockets
  - Tool-less removal of system board
- Quick Deploy Rails
  - Tool-less design "snap in" rail and ambidextrous cable management arm

Security

Power-on password
Keyboard password
External USB port enable/disable
Network Server Mode
Serial interface control
Administrator's password
Removable CD-ROM or DVD drive

Security Trusted Platform Module

The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline. For more information about TPM, including a white paper, go to: www.hp.com/go/TPM

NOTE: ProLiant OS pre-installed units will come with the partition required for TPM deployment.
NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

Server Power Cords

NOTE: If customers require a local power cord, they can check the power cord matrix for the appropriate county specific sku. Please see the following power cord matrix for details: http://www.hp.com/go/powercordmatrix

Standard Features

Power Supply	E5640 4P Model: (4) 1200W AC Power Supplies (220VAC only) X6550 4P Model: (8) 1200W AC Power Supplies (220VAC only) Power Supply Requirement Override NOTE: The HP ProLiant DL980 G7 requires Four Power Supplies to operate without power redundancy. Eight power supplies are required for power redundancy. The level of redundancy will be reported during the system power on. For planning purposes you can use the Power Advisor (www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor) which is more accurate to determine the power requirements. Also, there is an RBSU override switch capability that allows the user to override the base setting if the Power Advisor indicates the configuration is acceptable for low line operation.
UPS and PDU Power Cord Matrix	Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: www.hp.com/products/powercords.
System Fans	8 Hot plug, redundant fans ship standard
Required Cabling	For required cabling information, refer to the HP Web site at: www.hp.com/servers/dl980g7
Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server Microsoft Windows Server Hyper V Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Oracle Enterprise Linux (OEL) VMware NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: http://www.hp.com/go/ossupport and our driver download page www.hp.com/support/DL980G7.

Standard Features

Rack Airflow Requirements

Rack 10000 G2 series Cabinets

The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 G2 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 830 square inches (5,350 sq cm) of holes evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm).

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: http://www.hp.com/servers/dl980.

Rack Kit

Quick deploy rail system provides tool-free support for racks with square or round mounting holes (including Compaq/HP 7000, 9000, 10000 G2 and HP series), with an adjustment range of 24" - 36". The ambidextrous cable management arm can be mounted on either the left or right side for improved cable management.

NOTE: Cable management arm must be removed to access Hot Plug Power Supplies when the cable management arm is mounted on the right.

Telco Rack Support

Support for all 2-post Telco racks requires the use of the standard rack kit and an additional option kit from Rack Solutions at: http://www.hp.com/go/rackandpower.

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.

Standard Features

HP Enterprise Configurator

The HP eConfigure-Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance. http://www.hp.com/products/configurator

Service and Support

HP Care Pack services provide total care and support expertise with committed response designed to meet your IT and business needs.

HP Care Pack services include coverage for the HP branded hardware options qualified for the server and purchased at the same time or afterward that are internal to the enclosure. This also includes the 22" and smaller external monitors and tower UPS options up to 3kVA. These items will be covered at the same service level and for the same coverage period as the server. Coverage of UPS Battery is not included, and standard warranty terms & conditions apply. For servers or storage systems installed within a rack, service also covers all HP qualified rack options installed within the same rack.

To fully capitalizing on your HP ProLiant servers' capabilities requires a service partner who thoroughly understands your server technology and systems environment. HP Services, an industry leader in provision of multi vender support solutions, provides a range of support services designed to meet the varying needs of your business. Whether an SMB, or large global corporation, HP has a ProLiant server support offer to help you speedily deploy and maximize system uptime.

Recommended Service - simplify ProLiant solution implementation, maintenance, and management.

- Support: 3-Year 4-Hour response 24x7 Same Business Day Coverage only
- Deployment Service: Installation and Start up only

Enhanced Service - optimize service level to increase IT performance and availability.

- Support: 3-Year Support Plus 24 only

Refer to the information on "Installation & Start-Up" for service on ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet; to be delivered on a scheduled basis 8am-5pm, M-F, excluding HP holidays.

NOTE: For a complete listing of service offerings and information visit:
http://www.hp.com/services/proliantservices
http://www.hp.com/go/proliant/carepack

Models

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

HP DL980G7 E6540 6 core 2.0GHz 4p Svr AM445A	Processor(s)	(4) Intel Xeon® E6540 Processor (2.00GHz, 18MB cache, 105W)
	Memory	128GB (16 x 8GB) PC3-10600R Fully Buffered DIMMs (DDR3)
	Network Controller	HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
	Storage Controller	HP Smart Array P410i Controller with 512MB FBWC
	Hard Drives	None ship standard
	Internal Storage	2.4TB max (with optional 300GB SAS hard drives)
	Power Supplies	Four power supplies standard Optional upgrade to eight power supplies for redundancy
	Optical Drive	Slimline DVD
	Integrated Lights-Out	HP Integrated Lights-Out 3 (iLO 3) management processor (integrated on system board)
	Form Factor	Rack 8U

HP DL980G7 X6550 8 core 2.0GHz 4p Svr AM444A	Processor(s)	(4) Intel Xeon® X6550 Processor (2.00GHz, 18MB cache, 130W)
	Memory	256GB (32 x 8GB) PC3-10600R Fully Buffered DIMMs (DDR3)
	Network Controller	HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
	Storage Controller	HP Smart Array P410i Controller with 512MB FBWC
	Hard Drives	None ship standard
	Internal Storage	2.4TB max (with optional 300GB SAS hard drives
	Power Supplies	Eight power supplies standard (fifth - eighth power supply are for redundancy)
	Optical Drive	Slimline DVD
	Integrated Lights-Out	HP Integrated Lights-Out 3 (iLO 3) management processor (integrated on system board)
	Form Factor	Rack 8U

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.
NOTE: HP does not allow factory integration of options into standard models listed above. Configure-to-order servers must start with a CTO Chassis.
NOTE: FIO indicates that this option only available as a Factory Installable Option.

Step 1: Base Configuration

HP Models	HP ProLiant DL980 CTO system	AM426A
	Factory Integrated Model ships with:	
	HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter Eight HP Memory Boards Five PCI-express slots HP Smart Array P410i Controller Four hot-plug power supplies Eight redundant hot plug fans SFF SAS drive cage HP Integrated Lights-Out 3 (iLO 3) management processor (integrated on system board) Rack form factor, 8U	

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

HP Processors	NOTE: Each processor kit contains four processors. NOTE: If eight processors are desired select one xxxxxx-L21 and one xxxxxx-B21. Additionally one HP DL980 CPU Assembly (P/N: AM442A) will be required.	
	Eight-Core Processors	
	Intel Xeon Processor Model X7560 (2.26GHz, 24MB cache, 130W) 4P FIO Kit	597871-L21
	Intel Xeon Processor Model X6550 (2.0GHz, 18MB cache, 130W) 4P FIO Kit	597870-L21
	Six-Core Processors	
	Intel Xeon Processor Model E6540 (2.0GHz,18MB cache, 105W) 4P FIO Kit	597869-L21
	Four-Core Processors	
	Intel Xeon Processor Model E7520 (1.86GHz, 18MB cache, 95W) 4P FIO Kit	597868-L21
HP Memory	**Registered DIMMs (RDIMMs)**	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	HP Memory Board	588141-B21

Step 3: Choose Additional Factory Integratable Options (only one of the following from each list unless otherwise noted)

HP Insight Software	HP Insight Control suite, No Media 1-Server License Factory-Integratable Option (FIO) including 1 year of 24x7 Technical Support and Updates	582765-B21
	HP Insight Control for Linux, No Media 1-Server License Factory-Integratable Option (FIO) including 1 year of 24x7 Technical Support and Updates	TC203A

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Core Options" and "Additional Options" section below.

Core Options

NOTE: Some options may not be integrated at the factory. Contact your local sales representative for additional information.

HP Unique Options	PCI Express I/O Exp. Kit NOTE: Adds four PCI-E 2.0 x8, one PCI-E 2.0 x4 and one PCI-E 1.1 x4.	588137-B21
	PCI-X / PCI Express I/O Exp. Kit NOTE: Adds two PCI-E 2.0 x16, one PCI-E 2.0 x4 and two PCI-X.	588139-B21
	Low Profile PCI Express I/O Expansion Kit NOTE: Adds four PCI-E 2.0 x8, one PCI-E 2.0 x4.	AM434A
	HP DL980 CPU Assembly - required for 8p configurations only	AM442A
HP Processors	NOTE: Each processor kit contains four processors. 8P configurations require one HP DL980 CPU Assembly (P/N: AM442A)	
	Eight-Core Processors	
	Intel Xeon Processor Model X7560 (2.26GHz, 24MB cache, 130W) 4P Kit	597871-B21
	Intel Xeon Processor Model X6550 (2.0GHz, 18MB cache, 130W) 4P Kit	597870-B21
	Six-Core Processors	
	Intel Xeon Processor Model E6540 (2.0GHz,18MB cache, 105W) 4P Kit	597869-B21
	Four-Core Processors	
	Intel Xeon Processor Model E7520 (1.86GHz, 18MB cache, 95W) 4P Kit	597868-B21
HP Memory	**Registered DIMMs (RDIMMs)**	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	HP Memory Board	588141-B21
	NOTE: Eight memory boards come standard in all pre-configured and CTO models. A maximum of 16 memory boards are supported in the server (requires installation of the HP DL980 CPU Assembly P/N: AM442A).	
HP Optical Drives	HP Slim SATA DVD-ROM Optical Drive	481041-B21
	HP Slim SATA DVD RW Optical Drive	481043-B21

Core Options

HP Hard Drives	NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components. NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.	
	SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives	
	HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507127-B21
	HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
	HP 72GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512545-B21
HP Networking	**Gigabit Ethernet Adapters**	
	HP NC112T PCI Express Gigabit Server Adapter	503746-B21
	HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
	HP NC364T PCI Express Quad Port Gigabit Server Adapter NOTE: There is a maximum of five NC364T PCI Express Quad Port Gigabit Server Adapter NICs allowed in this server.	435508-B21
	HP NC375T PCI Express Quad Port Gigabit Server Adapter	538696-B21
	HP NC365T Ethernet Quad Port Server Adapter	593722-B21
	HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter	458492-B21
	10 Gigabit Ethernet Adapters NOTE: No more than two 10GbE I/O devices are supported in a single ProLiant server. NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each adapter. NOTE: Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately.	
	HP NC522SFP Dual Port 10GbE Server Adapter	468332-B21
	HP NC524SFP Dual Port 10GbE Server Adapter	489892-B21
	HP NC550SFP Dual Port 10GbE Server Adapter	581201-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs	
	Smart-mini DIMM Module	
	HP 512MB DDR2 244P Mini DIMM Module Kit NOTE: By plugging the Smart-mini DIMM Module to the HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter, TCP/IP Offload Engine (TOE) for Windows is enabled/supported.	519808-B21
HP InfiniBand	HP IB 4X DDR CX-2 PCI-e G2 Dual Port HCA	592521-B21
	HP IB 4X QDR CX-2 PCI-e G2 Dual Port HCA	592520-B21

Core Options

HP I/O Expansion Options	PCI Express I/O Exp. Kit NOTE: Adds four PCI-E 2.0 x8, one PCI-E 2.0 x4 and one PCI-E 1.1 x4.	588139-B21
	PCI-X / PCI Express I/O Exp. Kit NOTE: Adds two PCI-E 2.0 x16, one PCI-E 2.0 x4 and two PCI-X.	588137-B21
	Low Profile PCI Express I/O Expansion Kit NOTE: Adds four PCI-E 2.0 x8, one PCI-E 2.0 x4.	AM434A
HP Power Supplies	HP 1200W CS Platinum Power Supply 94% Efficiency	578322-B21

Additional Options

HP Insight Software	HP Insight Control	
	HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License	452148-B22
	HP Insight Control, No Media, Electronic License including 1 year of 24x7 Technical Support and Updates	T9074BAE
	HP Insight Control, Electronic License for bundling with ProLiant ML/DL server, including 1 year of 24x7 Technical Support and Updates	TC278AAE
	HP Insight Control, Tracking License for bundling with ProLiant ML/DL server, including 1 year of 24x7 Technical Support and Updates	TC275A
	HP Insight Software Media Kit	436222-B21
	NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key. NOTE: Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. NOTE: Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates. NOTE: For additional license options please see the Insight Control QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_na/12631_na.html	
	HP Insight Control for Linux	
	HP Insight Control for Linux, 1-server license, including one year of 24x7 Technical Support and Updates, Electronic	TC213AAE
	HP Insight Control for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates	TC209A
	HP Insight Control for Linux, Media pack (DVD) - No licenses included	TC208A
	NOTE: Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: http://www.hp.com/go/ic-linux (click on Download button). NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key. NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service. NOTE: For additional License Kits, including electronic licensing options, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13019_na/13019_na.html	
	HP Integrated Lights-Out Advanced (iLO Advanced)	
	HP Integrated Lights-Out (iLO) Advanced for ProLiant Electronic License, including (1) year of 24x7 Technical Support and Updates NOTE: This part number (P/N TA850AAE) can be purchased as a single license or as multiple licenses (no minimum) with a single activation key.	TA850AAE
	HP Integrated Lights-Out (iLO) Advanced for ProLiant (1) Server License/(1) Key, No Media, including (1) year of 24x7 Technical Support and Updates NOTE: This license allows 1 server to be deployed and managed via HP iLO Advanced. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in	512485-B21

	order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service. NOTE: For additional license kits, including electronic delivery options, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12362_na/12362_na.html	
	HP Insight Control server deployment	
	HP Insight Control server deployment Electronic License including 1 year 24x7 Technical Support and Updates	T9082AAE
	HP Insight Control server deployment, Single-Server License including 1 year of 24x7 Technical Support and Updates	452151-B21
	NOTE: Licenses ship without media. The Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates. NOTE: Electronic licenses can be used to purchase multiple licenses with a single activation key. NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service. NOTE: For additional license kits please see the Insight Control QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12631_na/12631_na.html	
HP Security - TPM	HP Trusted Platform Module Option Kit	488069-B21
HP Storage Controllers	SAS Controllers	
	Smart Array P212 Controller	
	HP Smart Array P212/256 MB Controller	462834-B21
	Smart Array P411 Controller	
	HP Smart Array P411/256 MB Controller	462830-B21
	HP Smart Array P411/1G Flash Backed Write Cache	572531-B21
	HP Smart Array P411/512MB Flash Backed Write Cache	578229-B21
	Smart Array P812 Controller	
	HP Smart Array P812/1G Flash Backed Cache Controller	487204-B21
	Optional Upgrades NOTE: Maximum of two battery or FBWC kits (for Smart Array Controllers) can be installed in upper full height/full length (FH/FL) I/O slot area. Maximum of one battery or FBWC kit (for Smart Array Controller) can be installed in lower low profile (LP) I/O slot area.	
	Battery Kit upgrade NOTE: Supported on HP Smart Array P212 Controller and HP Smart Array P411 Controller only.	462969-B21
	1G Flash Backed Write Cache	534562-B21
	512MB Flash Backed Write Cache	534916-B21
	HP Smart Array Advanced Pack No Media 1-Server license including 1yr 24x7 Technical Support NOTE: This part number can be used to purchase a single license or to order multiple licenses with a single activation key. Customers will receive a license entitlement	516471-B21

certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HP Software Technical Support Services.

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13203_na/13203_na.html (Smart Array P212 Controller)
http://h18000.www1.hp.com/products/quickspecs/13202_na/13202_na.html (Smart Array P411 Controller)
http://h18000.www1.hp.com/products/quickspecs/13558_na/13558_na.html (Smart Array P812 Controller)
http://h18000.www1.hp.com/products/quickspecs/13200_na/13200_na.html (Smart Array Advanced Pack)

SAS HBA

HP SC08Ge Host Bus Adapter	488765-B21
HP SC08e 6Gb 2-ports Ext PCIe SAS HBA NOTE: This is a 2 x4 External Port HBA NOTE: This is only approved for the HP StorageWorks P2000 G3 SAS Modular Smart Array.	614988-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18004.www1.hp.com/products/quickspecs/13082_na/13082_na.html (SC08Ge HBA)
http://h18004.www1.hp.com/products/quickspecs/13651_na/13651_na.html (SC08e 6Gb HBA)

HP Tape Backup

NOTE: For the complete range of StorageWorks tape drives, autoloaders, libraries and media see: http://www.hp.com/go/tape. For hardware and software compatibility of HP StorageWorks tape backup products see: http://www.hp.com/go/connect.

HP StorageWorks DAT 320 USB Tape Drive in 1U USB Rack Kit	AP835A
HP StorageWorks DAT 320 SAS Internal Tape Drive NOTE: For installation into 1U SAS rack kit (AE459B) or 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	AJ830A
HP StorageWorks LTO-3 Ultrium 920 SAS Internal Tape Drive NOTE: For installation into 1U SAS rack kit (AE459B) or 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	EH847A
HP StorageWorks LTO-4 Ultrium 1760 Internal Tape Drive NOTE: For installation into 1U SAS rack kit (AE459B) or 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	EH919A
HP StorageWorks LTO-4 Ultrium 1840 Internal Tape Drive NOTE: For installation into 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	EH860A

Additional Options

	HP StorageWorks LTO-5 Ultrium 3280 Internal Tape Drive NOTE: For installation into 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	EH899A
	HP StorageWorks 1/8 G2 LTO-5 Ultrium 3000 SAS Tape Autoloader NOTE: Requires HP 1U Tape Autoloader Rack Kit (AH166A) for rack installation. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	BL536A
	HP StorageWorks MSL2024 Tape Library with one LTO-5 Ultrium 3000 SAS Drive NOTE: Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	BL537A
	HP StorageWorks MSL4048 Tape Library with one LTO-4 Ultrium 3000 SAS Drive NOTE: Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	BL538A
	HP StorageWorks MSL8096 Tape Library with one LTO-5 Ultrium 3000 SAS Drive NOTE: Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	BL539A
HP Disk Backup	NOTE: For the complete range of StorageWorks D2D Backup Systems see: http://www.hp.com/go/d2d. For the complete range of StorageWorks RDX drives and media see: http://www.hp.com/go/rdx. For hardware and software compatibility of HP StorageWorks disk backup products see: http://www.hp.com/go/connect.	
	HP StorageWorks D2D Backup Systems with Backup Data Deduplication	
	HP StorageWorks D2D2504i Backup System NOTE: 3.0TB of useable network disk backup capacity. Network connected appliance with connectivity using the iSCSI protocol. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	EJ002B
	HP StorageWorks D2D4009i Backup System NOTE: 7.5TB of useable network disk backup capacity. Network connected appliance with connectivity using the iSCSI protocol. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	EH939A
	HP StorageWorks D2D4112fc Backup System NOTE: 9.0TB (expandable to 18.0TB) of useable network disk backup capacity. Fibre Channel SAN connected appliance. Direct server attach is not supported, requires connection via SAN fabric.	EH993B
	HP StorageWorks RDX Removable Disk Backup Systems USB	
	HP StorageWorks RDX500 Internal Removable Disk Backup System NOTE: For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 500GB of disk capacity per data cartridge.	AJ934A
	HP StorageWorks RDX750 Internal Removable Disk Backup System NOTE: For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 750GB of disk capacity per data cartridge.	AW577A

Additional Options

HP StorageWorks Options	StorageWorks Fibre Channel HBA	
	NOTE: The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html	
	Emulex Fibre Channel HBAs	
	HP StorageWorks 81E PCI-e FC HBA Single Port	AJ762A
	HP StorageWorks 82E PCI-e FC HBA Dual Port	AJ763A
	HP StorageWorks FC2142 4Gb PCI-e HBA	A8002A
	HP StorageWorks FC2242 Dual Channel 4Gb PCI-e HBA	A8003A
	QLogic Fibre Channel HBAs	
	HP StorageWorks 81Q PCI-e FC HBA Single Port	AK344A
	HP StorageWorks 82Q PCI-e FC HBA Dual Port	AJ764A
	HP StorageWorks FC1142 4Gb PCI-e HBA	AE311A
	HP StorageWorks FC1242 Dual Channel 4Gb PCI-e HBA	AE312A
	StorageWorks SCSI HBA	
	HP U320e SCSI Host Bus Adapter	AH627A
	NOTE: Recommended HBA for MSL SCSI Tape Library connect.	
	StorageWorks Converged Network Adapter	
	HP CN1000E 2P Converged Network Adapter	AW520A
	NOTE: There is a maximum of two CN1000E 2P Converged Network Adapers allowed in this server.	
HP Disk Storage Systems	MSA SAN Storage Arrays	
	HP StorageWorks 50 Modular Smart Array	364430-B21
	NOTE: Please see the QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/12245_na/12245_na.html	
	Disk Enclosures	
	HP StorageWorks D2600 Disk Enclosure	AJ940A
	HP StorageWorks D2700 Disk Enclosure	AJ941A
	NOTE: Please see the QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/13404_na/13404_na.html	

Additional Options

HP Uninterruptible Power Systems	HP Rack-Mountable R5500 UPS	
	HP R5500 VA UPS	AF426A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/11871_na/11871_na.html	
	HP R/T3000 Uninterruptible Power System (UPS)	
	HP R/T3000 UPS, High voltage	AF453A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13417_na/13417_na.html	
	NOTE: For additional information on HP Uninterruptible Power Systems please go to: www.hp.com/servers/rackups. NOTE: For additional information on sizing your server, please reference: http://www.upssizer.com.	
HP Power Distribution Unit	HP Monitored Power Distribution Unit: Half Rack Version	
	HP 4.9 kVA S124 Monitored PDU- single input, 1Ø, 24A	AF914A
	HP Monitored Power Distribution Unit: Full Rack Version	
	HP 8.6 kVA S1324 Monitored PDU- single input, 3Ø, 24A	AF504A
	HP 8.3 S1140 Monitored PDU- single input, 1Ø, 40A	AF506A
	NOTE: Please see the following QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/12118_na/12118_na.html	
	Modular Power Distribution Units 1U/0U (Up to 32 outlets) NOTE: 1U/0U mounting brackets shipped with the unit (optimized for 10000 and 9000 series racks).	
	HP Modular Power Distribution Units (mPDU), High Volt Model, 24A (200-240 VAC)	252663-D72
	8.3kVA Model - mPDU, 40A, High (power cord attached)	252663-D73
	HP Modular Power Distribution Units (mPDU), High Volt Model, 16A (200-240 VAC)	252663-B24
	NOTE: This PDU has a detachable input power cord and allows for adaptability to specific power requirements.	
	NOTE: Please see the following QuickSpecs for additional options including shorter jumper cables and specific power cords: http://h18000.www1.hp.com/products/quickspecs/11041_na/11041_na.html NOTE: For additional information on HP Power Distribution Units including accessories please go to: www.hp.com/go/pdu.	

Additional Options

HP Rack Series	HP Rack 10000 G2 Series (Carbon/Graphite Metallic)	
	10642 G2 (42U) Rack Cabinet - Pallet	AF001A
	10642 G2 (42U) Rack Cabinet - Shock Pallet	AF002A
	10647 G2 (47U) Rack Cabinet - Pallet	AF031A
	10647 G2 (47U) Rack Cabinet 1200mm Deep - Shock Pallet	AF044A
	NOTE: Due to handling and shipping requirements, AF044A is only orderable through HP Factory Express. It is not for direct sales. Customer site surveys are required before an order is approved. CTO orders may require additional lead time.	
	NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed.	
	NOTE: Please see the Rack 10000 G2 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12402_na/12402_na.html	
	NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.	
HP Rack Options	HP KVM Switch Options	
	2x1Ex16 IP Console SwitchG2 with Virtual Media	AF621A
	4x1Ex32 IP Console SwitchG2 with Virtual Media	AF622A
	2x16 Server Console Switch G2 with Virtual Media	AF618A
	2x32 Server Console Switch G2 with Virtual Media	AF619A
	PS/2 Virtual Media Interface Adapter, 1 pack	AF604A
	NOTE: Requires PS/2 and one USB port on server.	
	Server console switch 0x2x8	AF616A
	Server console switch 0x2x16	AF617A
	PS/2 Interface Adapter, 1 pack	262588-B21
	PS/2 Interface Adapter, 8 pack	262587-B21
	NOTE: Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.	
	HP 1x4 Console Switch	AF611A
	PS2 Server Console Cable, 6 ft, 2 pack	AF612A

Additional Options

HP USB and SD Options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	HP USB 04 Standard Keyboard	DT528A#ABA
	HP 4GB SD Flash Media Kit NOTE: Blank SD media device is supported for use with VMware. SD media must be installed in the internal slot of the ProLiant server. Learn more at: http://www.hp.com/go/proliantvirtualization.	580387-B21
	HP 2GB USB Flash Media Drive Key NOTE: HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software like SmartStart. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to HP VMware Getting Started Guide for installation instructions.	608447-B21
HP Care Pack Services	Hardware Services On-site Service	
	4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UV301E
	4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UV298E
	6-Hour Call to Repair, On-site Service 7-Day x 24-Hour Coverage, 3 Years (U.S. Part Number)	
	6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UV292E
	Installation & Start-up Services	
	Hardware Installation, Electronic	UV304E
	Installation & Start-Up of a ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excl. HP holidays, Electronic	U4618E
	Installation and Startup for Essentials Rapid Deployment Pack, Electronic	U5683E
	Support Plus 24	
	Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	UX131E
	Onsite HW support 24x7, 4hr response and RedHat AS O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	UX132E
	Onsite HW support 24x7, 4hr response and SuSE O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	UX133E
	NOTE: For more information, customer/resellers can contact: http://www.hp.com/services/carepack	

NOTE: Memory configurations listed do not apply to "Factory Integrated Models".

HP ProLiant DL980 G7 Models

Memory Subsystem Architecture

Intel Xeon 7500 and 6500 series memory architecture is designed to take advantage of multiple stages of memory interleaving to reduce latency and increase bandwidth.

Each Intel Xeon 7500 and 6500 series processor contains two Memory Controllers as shown in the Processor/Memory interconnect figure below. Each Memory controller has two Scalable Memory Interface (SMI) buses operating in lockstep where each SMI bus connects to a memory buffer. The purpose of the buffer is to convert SMI to DDR3. Each buffer has two DDR3 channels and can support up to four DIMMs for a total of eight DIMMs per cartridge.

- The number of DIMMs or ranks does not affect memory frequency, but can affect memory bandwidth and performance. All DIMMs will run at the highest possible frequency for a given processor.
- DDR3 memory speed is a function of the processors QPI bus speed such that
  - Processors with a QPI speed of 6.4GT will run memory at 1066MHz
  - Processors with a QPI speed of 4.8GT will run memory at 800 MHz

DIMM Installation guidelines

Each memory cartridge can support up to 8 DIMMs, for a system total of 128 DIMMs. When installing DIMM modules in the Memory Cartridge observe the following minimum guidelines:

- UDIMMs are not supported
- Minimum allowable configuration is one Quad (two DIMMs on each of the two cartridges connected to processor one).
- DIMMs must be installed as Quads (four DIMMs with identical characteristics). For configuration simplicity HP recommends using identical part numbered DIMMs throughout when possible.
- DIMM Quads MUST be populated in sequence by letter designation. Install DIMMs 1A and 8A on each cartridge first, followed by DIMMs 3B and 6B on each cartridge, then DIMMs 2C and 7C, and finally DIMMs 4D and 5D last.
- Maximum performance is achieved by balancing DIMM Quads by letter groupings across all memory cartridges. All 1A and 8A DIMMs should be installed (preferably with the same size DIMMs in all memory cartridges across the entire system) first, followed by the B DIMMs, C DIMMs and D DIMMs.

AMP modes Online Sparing and Memory Mirroring have further requirements beyond these listed here. Please refer to the user guide for additional memory configuration requirements.

Memory Cartridge population guidelines

This server contains 8 memory cartridge slots within each processor memory drawer. Observe the following guidelines:

- A memory cartridge must be installed in each slot.
- To maximize performance distribute the total memory capacity evenly between all memory cartridges.
- When operating the system in 40-bit address mode and installing 64x 16GB DIMMs (1TB total memory), the 64 DIMMs must be spread evenly across all 16 memory cartridges, or some of the memory will not be recognized.
- Memory configurations larger than 1TB require the use of 44-bit addressing mode.

Hemisphere mode

The Xeon EX architecture incorporates hemisphere mode, a high performance interleaving technology. Hemisphere mode allows interleaving between the two processor memory controllers internal to each processor.

The DL980 G7 always uses Hemisphere mode. This requires that for each processor, the two memory cartridges attached to the processor have matching memory configurations. If the two memory configurations are not equal, the DL980 G7 will ignore (waste) the extra memory in the larger configuration.

Memory Performance Optimization

The DL980 G7 supports 128 DIMMs across eight multi-core processors. While there are many DIMM population configurations that can support any desired total memory size, optimal performance can only be achieved when DIMMs are populated to take advantage of the Xeon EX architecture. The largest contributor to performance is to populate each DDR3 channel in each memory cartridge. To achieve this, the minimum DIMM count per cartridge is four. Maximum bandwidth is reached by fully populating all memory cartridges with the maximum number of eight DIMMs per cartridge.

- The more ranks per DIMM the higher the performance, so Quad rank DIMMs perform better than dual rank DIMMs.
- Performance is best when the installed DIMMs are all of equal size.

NOTE: Memory configurations listed do not apply to "Factory Integrated Models". Only registered (RDIMM) speeds of 1066 or 1333 running at 1066 are supported. UDIMMs are not supported.

The following memory options are available from HP:

HP Memory	Registered DIMMs (RDIMMs)	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	HP Memory Board	588141-B21

A DVD drive bay

1-8 SFF SAS internal drive cage

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
HP Slimline DVD Optical drive	1	A	Integrated SATA
HP Slim SATA DVD RW Optical Drive	1	A	Integrated SATA

Hard Drives

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
300GB 6G SAS 10K DP 146GB 6G SAS 15K DP 72GB 6G SAS 15K DP	Up to 8	1-8	HP Smart Array P410i (standard on server) HP Smart Array P812/1GB FBWC Controller

Storage

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
D2600 Disk Enclosure	Up to 4	External	HP Smart Array P212/ 256 MB Controller
	Up to 8	External	HP Smart Array P411/256 MB Controller HP Smart Array P411/512 MB BBWC Controller HP Smart Array P411/1G FBWC Controller HP Smart Array P812 Controller
D2700 Disk Enclosure	Up to 2	External	HP Smart Array P212/256 MB Controller
	Up to 4	External	HP Smart Array P411/256 MB Controller HP Smart Array P411/512 MB BBWC Controller HP Smart Array P411/1G FBWC Controller HP Smart Array P812 Controller

Maximum Storage Capacity - (External SAS Enclosure Attached)

Internal	2.4.0TB (8 x 300GB SFF SAS Drives)
External	960TB (80 MSA60 enclosures x 12 drive bays each x 1TB SATA Drives)

Tape and Disk-Based Backup

NOTE: For the complete range of StorageWorks tape drives, autoloaders, libraries and media, including the internal fitting models, see: http://www.hp.com/go/tape. For the complete range of StorageWorks D2D Backup Systems see: http://www.hp.com/go/d2d. For the complete range of StorageWorks RDX drives and media see: http://www.hp.com/go/rdx. For hardware and software compatibility of HP StorageWorks disk and tape backup products see: http://www.hp.com/go/connect.

	Position Supported	Controller	Controller Part Number
HP StorageWorks USB Tape Drives DAT 40 DAT 72 DAT 160 DAT 320 1U USB Rack-Mount Kit	External	USB 2.0 Port	N/A
HP StorageWorks SAS Tape Drives DAT 160 DAT 320 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-4 Ultrium 1760 LTO-4 Ultrium 1840 LTO-5 Ultrium 3000 LTO-5 Ultrium 3280 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP Smart Array P212/256 MB Controller Please check the full compatibility information at: http://www.hp.com/go/connect	462828-B21

Storage

HP StorageWorks SCSI Tape Libraries MSL2024 MSL4048 MSL8096 MSL6000	External	HP U320e SCSI Dual Channel Controller Please check the full compatibility information at: http://www.hp.com/go/connect	AH627A
HP StorageWorks SAS Tape Autoloaders and Libraries 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096	External	HP Smart Array P212/256 MB Controller Please check the full compatibility information at: http://www.hp.com/go/connect	462828-B21
HP StorageWorks USB RDX Removable Disk Backup System RDX160 RDX320 RDX500 RDX750	External	USB 2.0 port	N/A
HP StorageWorks D2D Backup Systems, iSCSI D2D2500i D2D4000i	External	Embedded Network Controller. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	
HP StorageWorks D2D Backup Systems, Fibre Channel D2D4000fc	External	Direct server attach is not supported, requires connection via SAN fabric. See: http://www.hp.com/go/connect	

Power Specifications

HP 1200W CS Platinum Power Supply Kit					
Part Number	578322-B21				
Input Voltage Range (V rms)	200 to 240				
Frequency Range (Nominal) (Hz)	50/60				
Nominal Input Voltage (Vrms)	200	208	220	230	240
Maximum Rated Output Wattage Rating	1200	1200	1200	1200	1200
Nominal Input Current (A rms)	6.7	6.5	6.1	5.8	5.6
Maximum Rated Input Wattage Rating (Watts)	1290	1290	1290	1290	1290
Maximum Rated VA (Volt-Amp)	1345	1345	1345	1345	1345
Efficiency (%)	93	93	93	93	93
Power Factor	0.97				
Leakage Current (mA)	0.83	0.87	0.92	0.96	1.00
Maximum Inrush Current (A peak)	30				
Maximum Inrush Current duration (mS)	10				
Maximum British Thermal Unit Rating (BTU-Hr)	4403	4403	4403	4403	4403

System Unit Rack	**Dimensions** (H x W x D) (with bezel and XNC cables installed)	13.92 x 19.0 x 34.5 in (35.36 x 48.26 x 87.63 cm)	
	Weight (approximate)	Maximum (all hard drives, power supplies, and processors installed)	205 lb (93 kg)
		Minimum (one hard drive, power supply, and processor installed)	165 lb (75 kg)
	Input Requirements (per power supply)	Rated Line Voltage	200 - 240 VAC
		Rated Input Current	6.6A @ 200-240VAC
		Rated Input Frequency	50 - 60 Hz +/- 3hz
		Rated Input Power	1375W @ 200-240VAC
	BTU Rating	Maximum	14,330 BTU/hr (worst case configuration and utilization)
	Power Specifications	Maximum	4200 W (worst case configuration and utilization)
		NOTE: To review typical system power ratings use the HP Power Advisor which is available online located at url: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor - Click on the system of interest. Example: DL980 G7 - Follow the instructions of the next screens.	
	Power Supply Output (per power supply)	Rated Steady-State Power	1200W @ 200 - 240VAC
		Maximum Peak Power	1440W @ 200 - 240VAC
	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed.

			Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
		Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
		Idle	
		L WAd	7.5 Bels
		L pAm	59.7 dB
		Operating	
		L WAd	7.5 Bels
		L pAm	59.7 dB
	Emissions Classification (EMC)	FCC Rating	Class A
		Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1
		NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.	
HP Slim SATA DVD RW Optical Drive	Shipping Dimensions	3.97 x 7.81 x 10.75 in (10.08 x 19.84 x 27.31 cm)	
	Shipping Weight	5 lb (2.27 kg)	
	Disk	Applicable Disk	DVD-ROM
			DVD-R (Read Only)
			DVD-R DL
			DVD-RW
			DVD+R
			DVD+R DL
			DVD+RW
			DVD RAM
			CD-ROM XA
			CD-ROM Mode-1 data disc
			CD-ROM Mode-2 data disc
			CD Audio disc
			CD-Extra
			CD-RW
			CD-R
			Photo CD

		CD-I		
		CD-DA		
	Capacity	DVD-ROM	DVD-SL	4.7 GB/side
			DVD-DL	8.5 GB/side
			Double Sided	9.40 GB/side
		DVD+/-R		4.7 GB/side
		DVD +/-RW		4.7 GB/side
		DVD-RAM		5.2 GB/side
		CD-ROM	Mode-1	650 MB (550 MB)
			Mode-2	742 MB (640 MB)
	Block Size	DVD		2,048 bytes
		CD		2,352 (Mode-0)
				2352, 2340, 2336, 2048 bytes (Mode-1)
				2352, 2340, 2336, 2048 bytes (Mode-2)
	Diameter	120 mm (4.7 in), 80 mm (3.1 in) (with adapter at vertical mounting mode)		
Loading Mechanism	Tray type Manual Load			
Interface	SATA 1.5			
Access Times (typical)	Random	DVD-ROM < 120 ms, CD-ROM < 110 ms		
	Full-Stroke	DVD-ROM < 250 ms, CD-ROM < 210 ms		
Data Transfer Rate (sustained)	DVD-ROM	Single Layer 10.8 MB/sec. Max.		
	CD-ROM	3.6 MB/sec. Max.		
Cache Buffer	2 MB			
Spin-up Time (typical)	less than 15 seconds			
MTBF	60,000 Power On Hours (POH)			
Ambient Temperature	Operating	-41° to 122° F (5° to 50° C)		
	Storage/Transportation	-401° to 140° F (-30° to 60° C)		
Dimensions	(HxWxD, maximum)	0.5 x 5.2 x 5.45 in (12.7 x 132 x 138 mm)		
Option Kit Contents	DVD-RW drive with installation guide, warranty card, registration card			

Technical Specifications

Integrated Lights-Out 3 Standard (integrated on system board)	Architecture	PCI Express based health and remote management ASIC
	Processor	PCI Express RISC processor core running at 250MHz
	Upgradability	Option firmware upgradable via flash ROM
	Video Support	1600 x 1200 DVR max resolution
	Interfaces	One Ethernet Sideband connection (10/100/1000 Mb/s)
		One Ethernet network connection (10/100 Mb/s)
	Memory	128-MB DDR with ECC
	Operating System Support	Microsoft Windows Server 2008 R2 Enterprise Edition (64 bit)
		Microsoft Windows Server 2008 Enterprise Edition (64 bit)
		Red Hat Enterprise Linux 5.5 (64 bit)
		SUSE LINUX Enterprise Server 11 (64 bit)
		SUSE LINUX Enterprise Server 10 (64 bit)
		VMware ESX 4.1
	Client System Support	Microsoft Windows 7
		Microsoft Windows XP Professional Edition
		Microsoft Windows Vista Business and Ultimate Editions
		Red Hat Enterprise Desktop 5.00
		SUSE Linux Enterprise Desktop 11
		SUSE Linux Enterprise Desktop 10
	Client Browser Support	Microsoft Internet Explorer 8
		Microsoft Internet Explorer 7
		Microsoft Internet Explorer 6
		Firefox 3.5 (on supported Windows and Linux systems)
		Firefox 3.0 (on supported Windows and Linux systems)
	Command Line Support	Secure Shell and serial port access
		Secure Socket Layer
		Secure Shell version 2
	Security	Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface
		AES encryption of video
		RC4 encryption of video
	Directory Support Services	Active Directory v1.0 (Windows 2003)
	Driver Support	HP ProLiant iLO 3 Management Controller Driver
	Management protocols supported	SNMP, IPMI 2.0 (system and LAN interface), DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP), HP RIBCL XML

Technical Specifications

Smart Array P410i Controller	Disk Drive and Enclosure Interface	6Gb/s SAS (Serial Attached SCSI)
	SAS Connectors	2 internal (mini SAS) x8 wide port connectors
	Cache Memory Speed	DDR2-800MHz with 40 or 72-bit wide bus provides up to 4.2GB/s maximum bandwidth
	Server Interface	x8 5G PCIe 2.0 provides 4GB/s maximum bandwidth.
	SAS Speed	x8 6G SAS provides 4.8GB/s maximum bandwidth.
	Cache Memory	72-bit 512MB or 1GB Flash backed write cache transportable with flash upgrade.
	Logical Drives Supported	Up to 64 logical drives
	Maximum Logical Drive Capacity	Greater than 2TB
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 6, 6+0 (Advanced Data Guarding) NOTE: RAID 6, 6+0 can be enabled with either: • Minimum of 512MB FBWC and Smart Array Advanced Pack License Key option upgrades RAID 5, 5+0 (Distributed Data Guarding) NOTE: A minimum of 512MB FBWC is required to enable RAID 5, 5+0 support of the Smart Array P410i RAID 1+0 (Striping & Mirroring) RAID 0 (Striping)

HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter	Network Interface	10Base-T/100Base-TX/1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
		IEEE 802.3ad 1000Base-TX	
		IEEE 802.1p 100Base-TX	
		IEEE 802.1q 100Base-TX	
	Data Transfer Method	PCI-Express (x4)	
	Controller	Qlogic/NetXen NX3031	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000 Mb/s
	Connector	RJ-45	
	Cable Support	10Base-T	Categories 3, 4, or 5 UTP; up to 328 ft (100 m)
		100Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)
		1000Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)

Environment-friendly Products and Approach	End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.